
PRESENTATION OF THE ACADEMY
MEDAL TO HARRY EAGLE, M.D.*

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I AM greatly flattered to be chosen to give the citation for the 1970 Award of the Academy Medal. At the outset, I must confess that I am moonlighting, for it would take at least three scientists to describe adequately the achievements of the recipient, Dr. Harry Eagle, as will soon be apparent. And any one of these achievements would qualify him for the award that he so richly deserves.

Harry Eagle was born in New York City in 1905. As an infant he showed his precociousness by moving himself and his family to Baltimore, a city in which he was destined to spend many but by no means all of his productive years, for Harry Eagle is truly peripatetic, both geographically and, if the term applies, scientifically. He received his A.B. and M.D. from Johns Hopkins University in 1923 and 1927 respectively, after which he interned and, for the next three years, he was an instructor in the Department of Medicine at his alma mater.

His first research interests were in immunology, both basic immunological mechanisms and, particularly, the serology of syphilis, a subject to which he made many fundamental contributions for a period of 23 years. His scientific curiosity drew him to Harvard for the year 1932-1933 where, as a National Research Council Fellow, he became interested, under the influence of the late Dr. E. J. Cohn, in the mechanisms of blood clotting. He then went to the University of Pennsylvania and spent three years as assistant professor of microbiology. His papers during this period dealt with the serology of syphilis and the fundamentals of coagulation. In the latter field he was the first to demonstrate that the clotting mechanism depended upon a complex series of enzymatic reactions. He was 30 years ahead of his field.

In 1936 Harry Eagle became a commissioned officer of the U.S.

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Public Health Service. His reasons for accepting this post were compelling. He was the first such officer to receive an unrestricted assignment with the liberty to pursue his own research interests. He became director of the Venereal Disease Research Laboratory and Laboratory of Experimental Therapeutics, U.S. Public Health Service, and Johns Hopkins School of Hygiene and Public Health, a position he was to hold for 12 years. Harry Eagle's interests now turned to the chemotherapy of syphilis, trypanosomiasis, and leishmaniasis. He became a true pharmacologist in the days when the tools of chemotherapy were very crude indeed, namely compounds of arsenic, bismuth, mercury, and antimony. The host was almost as vulnerable as the parasite to these chemotherapeutic blunderbusses. Undaunted, he worked out the basic mechanisms of the actions of these drugs on both parasite and host, introduced new chemotherapeutic agents, and combined both basic and applied research. In those days, the treatment of syphilis was long and protracted, alternating between courses of arsenicals and either bismuth or mercury for a period of at least one and one-half years. There was an aphorism at the time: "A night with Venus and a lifetime with Mercury." Harry Eagle decided to do something about this sequence; I am referring of course to the lifetime with Mercury. He initiated a study on the intensive treatment of syphilis—probably his only effort that was not crowned with success because penicillin came on the scene, and arsenic and mercury became obsolete.

You can guess the next chapter in Harry Eagle's scientific career. He now turned his attention to penicillin and, in a brilliant series of papers published between 1944 and 1954, established basic concepts of chemotherapy that are as valid today as when first proposed. One of my most vivid memories is the presentation of this work made by Harry Eagle at the Combined Staff Conference of the Columbia University College of Physicians and Surgeons. The standing ovation he received from students and staff was most unusual.

In 1947 Harry Eagle moved to the National Institutes of Health, Bethesda, Md., where he occupied a number of important research and administrative posts. In 1955 he again changed his area of research; he now worked in cell biology, specifically cell and tissue culture. He realized that the crude media then in use precluded the type of studies he wished to pursue. Therefore he meticulously determined the amino acid, vitamin, and mineral requirements necessary for the growth of cells in

culture, and Eagle's medium became famous throughout the world. With this powerful tool Eagle now embarked upon a series of quantitative studies on the pathways of amino-acid and nucleic-acid metabolism of cells in culture and, more important, the examination of their function and regulation. He is now engaged in the investigation of the biochemical basis of malignancy; he proceeds by studying the interactions in tissue culture between normal and malignant cells, their biochemical differences, and the metabolic changes that occur when a normal tissue culture becomes malignant by the application of oncogenic viruses. Many questions have already been answered. Surely if the mysteries of malignant growth and its control are ever to be solved, it will be by the methods that have been initiated by Harry Eagle and that are now in the hands of cell biologists the world over,

Dr. Eagle's accomplishments have received such wide recognition that to list his honors and awards as well as his activities on the national scene is impractical. However, I am happy to make one more remark about his scientific career. In 1961 he left the National Institutes of Health to become professor and chairman of the Department of Cell Biology at the Albert Einstein College of Medicine. He is now the professor and chairman of the Division of Biological Sciences. His impact on the school can be appreciated only by those who have had contact with him. Suffice it to say that the quality of his teaching is equal to that of his research.

If I have been too long in my presentation, blame the recipient and not the speaker. It is one thing to dabble in many areas of science, it is another to become successively a leader in each of the fields of immunology, hematology, pharmacology, microbiology, and cell biology. I very much fear that in an attempt to cover the gamut of Harry Eagle's achievements, full justice has been afforded to none.

Despite his many honors, I am sure the medal he is about to receive will be one he will cherish most highly.